UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,711	08/02/2001	Chiaki Kasada	KASADA-4	6303

7590 06/26/2007

Browdy and Neimark
624 Ninth Street NW
Washington, DC 20001-5303

EXAMINER	
ANGEBRANNDT, MARTIN J	
ART UNIT	PAPER NUMBER
1756	

MAIL DATE	DELIVERY MODE
06/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/890,711	KASADA ET AL.	
	Examiner	Art Unit	
	Martin J. Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10,11 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10,11 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The response of the applicant has been received and made of record. Responses to the arguments of the applicant are presented after the first rejection to which they are directed. Claims 6-8,10-12,15 and 18 are active. Rejections of the previous office action not repeated below are withdrawn based upon the amendments to the claims and corresponding arguments.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 10,11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 60-083892, in view of Chapman et al. '881, Matsui et al. '758 and Onishi et al. JP 05-038878 (machine translation attached).

JP 60-083892 in examples 2-5 in table 1 on page 22. These use dyes D-17 and D-21 on page 7. The singlet oxygen quenchers both absorb in the visible and act to stabilize the other dyes. The dye is cationic and needs a anion as the counterion and the quencher is an anion with a cationic counterion, these will exchange ions in solution and at least some of the compound of the dyes D-17 or D21 with the quencher as the counterion will be present in the dyes solution and the resulting coated optical recording medium film. The use of a HeCd laser, which inherently emits at 325 and 441.8 nm is disclosed. (page 20/lower right). The examiner had an oral spot translation made, if the applicant has an English translation made, the examiner would appreciate a copy with the subsequent response.

Chapman et al. '881 teach dye based optical recording media which can be written upon using a laser in the 400-660 nm range (9/7-15). The substrate used is grooved and may have a depth of 30-270 nm, a groove width of 100-800 nm and a pitch of 0.5 to 1.8 microns. (10/5-8)

Matsui et al. '758 establish that it is well known in the optical recording media art to increase/improve the capacity of the recording media by reducing the distance between pits and the track pitch (1/19-21). This requires the use of a smaller laser beams spot size, which can only be achieved by using a shorter wavelength laser, which in 1993 was not possible. (1/36-61).

Onishi et al. JP 05-038878 (machine translation attached) establishes that styryl dyes have an absorption centered at ~425 nm (see figure 3). The shortening of the wavelength to decrease the spot size of the laser beams and increase the recording density is disclosed. [0003,0009]. Note grooved substrate in figure 2.

Shinkai et al. '722 teach the use of metallized dithoilate or azo dyes as quenchers and more specifically as counter ions to stabilizer cyanine dyes. (3/44-50).

It would have been obvious to modify the cited examples of JP 60-083892 by adding tracking grooves to reduce crosstalk and proper tracking, such as those with a pitches of 0.5 to 0.7 microns taught by Chapman et al. '881 as useful with 400-660 nm lasers to allow tracking which is congruent with the use of tracking grooves in styryl dye based recording media shown in figure 2 of Onishi et al. JP 05-038878 and to use short wavelength lasers in the 400-441.8 nm range to decrease the laser spot size as taught by Matsui et al. '758 and Onishi et al. JP 05-038878 and based upon the absorption of a similar styryl dye shown in Onishi et al. JP 05-038878 establish a reasonable expectation of success and to use azo dyes such as thaose disclosed by Shinkai et al. '722 in place of the metal dithiolates taught by JP 60-083892 based

upon thier disclosed equivalence as quenchers and counterion in cyanine3 dyes which together with styryl dyes are methine dyes,

The addition of Chapman et al. '881, Matsui et al. '758 and Onishi et al. JP 05-038878 address the added limitations.

4. Claims 10,11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 60-232995, in view of Chapman et al. '881, Matsui et al. '758 and Onishi et al. JP 05-038878 (machine translation attached).

JP 60-232995 teaches the use of dyes of formula II, where Y2 is a heterocyclic moiety, L_1 and L_2 are CH, l_2 is 1, R_{21} is alkyl and R_{22} is a monovalent group (page 7). The use of the singlet oxygen quenchers shown on pages 19-21 is disclosed. Examples 1-10 show mixtures of dyes in the recording layer (table 1, page 32). Example 1 coats a 30 nm acrylic disk with a colloidal silica subbing layer and then the dye layer formed to a thickness of 0.06 microns (60 nm). (page 32/upper left column). Example 2 on page 32 is formed as in example 1, but with different dyes, specifically dye D11 and dye D^- I 2 (see table on page 32). Dye D^- I 2 is shown on page 6./upper left) . Dye D 11 is dye D^+ I 17 with quencher Q^- 1-8. Dye D^+ I 17 is the dimethine dye shown in the shown at the bottom of page 6. Quencher Q^- 1-8 is a **Nickel** bis dithiolate shown on page 19/lower right. Dyes D^+ II 1 and D^+ II 4 are dimethine dyes described on page 7-9, particularly in the table on page 9 and with their counter ions on page 24/upper left. Y2 can be other rings. The use of a HeCd laser, which inherently emits at 325 and 441.8 nm is disclosed. (page 31/lower left). Examples 1-3 meet the claims where the phi 1 is indolene and phi 2 is a heterocycle. The examiner had an oral spot translation made, if the applicant has an English translation made, the examiner would appreciate a copy with the subsequent response.

It would have been obvious to modify the cited examples of JP 60-232995 by adding tracking grooves to reduce crosstalk and proper tracking, such as those with a pitches of 0.5 to 0.7 microns taught by Chapman et al. '881 as useful with 400-660 nm lasers to allow tracking which is congruent with the use of tracking grooves in styryl dye based recording media shown in figure 2 of Onishi et al. JP 05-038878 and to use short wavelength lasers in the 400-441.8 nm range to decrease the laser spot size as taught by Matsui et al. '758 and Onishi et al. JP 05-038878 and based upon the absorption of a similar styryl dye shown in Onishi et al. JP 05-038878 establish a reasonable expectation of success and to use azo dyes such as thaose disclosed by Shinkai et al. '722 in place of the metal dithiolates taught by JP 60-083892 based upon thier disclosed equivalence as quenchers and counterion in cyanine3 dyes which together with styryl dyes are methine dyes,

To address the embodiments where phi 2 is an aromatic ring, the examiner holds that it would have been obvious to one skilled in the art to modify example 1 by replacing dye D^- I 2 with dyes D^- II-1 or D^- II-4 with a reasonable expectation of forming a useful optical recording medium with similar performance based upon the equivalence of dimethine dyes as the secondary dyes. The resulting combination would include a quencher and some ion exchange would occur leaving the quencher Q I-8 as the counterion for the dye D^+ II 1 or D^+ II 4.

To address the embodiments where phi 1 is benzoxazole or benzothiazole and phi 2 is a heterocycle, it would have been obvious to one skilled in the art to modify example 2 by using dyes D+ I-3 through D+ I-8, and D I-18 through D+ I 20, in place of D^+ I 17 with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of equivalence.

The addition of Chapman et al. '881, Matsui et al. '758 and Onishi et al. JP 05-038878 address the added limitations. The addition of Shinkai et al. '722 addresses the use of metal azo dyes as the counter ion for methine dyes such as styryl and cyanine dyes. Further both Matsui et al. '758 and Onishi et al. JP 05-038878 (machine translation attached) establish that it is known in the art to increase the information capacity of optical recording media by using a shorter laser wavelength to decrease the spot size of the laser and to use narrower pitches. While it is true that in 1985, capacities over 4.7 GB were not contemplated, the issue is more of what one of ordinary skill in the art would have known at the time the invention was made by the applicant. The date of this is 12/02/1999.

5. Claims 10,11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over either (JP 60-232995 or JP 60-083892), in view of Chapman et al. '881, Matsui et al. '758 and Onishi et al. JP 05-038878 (machine translation attached), further in view of Okusa et al. '046.

Okusa et al. '046 teaches dyes II-25,II-28, II-32, II-53,II-56,II-58,II-66,III-2, III-14,II-15,III-21,III-31,III-32,III-44,III-45. Example 115 in table 1 uses III-44. These are sensitizing agents (51/24-33). Note that these are shown to be superior to the comparative compounds CR-1 through CR-5 which are p-dialkyl substituted. See various moieties (40/39-55). The groups for R_{21} to R_{25} of formula II in column 2 may be hydrogen, alkyl, halogen, alkoxy, aryl, hydroxyl or heterocycles. (2/63-67).

To address the other embodiments where phi 2 is an aromatic moiety, the examiner holds it would have been obvious to modify the medium rendered obvious above by the combination of either (JP 60-232995 or JP 60-083892), with Chapman et al. '881, Matsui et al. '758 and Onishi et al. JP 05-038878, by replacing the indolene moiety in dye D^- II-1 or D^- II-4 with

thiazole, benzothiazole,, oxazole, benzooxazole, pyridine, quinoline, imidazoel or benzimidazole based upon the equivalence in formula II on page 7 of JP 60-232995 and the that of formula IV in Okusa et al. '046 with a reasonable expectation of forming a useful optical recording medium.

6. Claims 10,11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over either (JP 60-232995 or JP 60-083892), in view of Chapman et al. '881, Matsui et al. '758,Onishi et al. JP 05-038878 (machine translation attached) and Okusa et al. '046, further in view of Ootagura et al. '822.

Ootaguro et al. '882 teaches in examples 54 and 55, the coating of a solution of 3 parts cyanine dye NK 2421 (a heptamethine cyanine dyes with a perchlorate anion, see Maruyama et al. below) and 1 part 4-N,N-diethylamino-4'-nitrosodiphenylamine (the ethyl homologue of the compound used in example 1 of the instant specification) (0.33:1 ratio), which is coated on a glass substrate. 4-N,N-diethylamino-4'-nitrosodiphenylamine is disclosed as having a maximum absorption at 440 nm. (24/28). 4-N,N-dimethylamino-4'-nitrosodiphenylamine is also disclosed (6/24-37). These compounds are disclosed as not suffering from the low solubility of other stabilizers, such as metal complexes (2/6-43).

To address the embodiment were a quencher such as that used in example 6-2 of the instant application is used, the examiner cites Ootaguro et al. '882 and holds that it would have been obvious to one skilled in the art to modify the recording media resulting from the combination of either (JP 60-232995 or JP 60-083892), with Chapman et al. '881, Matsui et al. '758,Onishi et al. JP 05-038878 (machine translation attached) and Okusa et al. '046 by adding the light stabilizing 4-N,N-diethylamino-4'-nitrosodiphenylamine of Ootaguro et al. '882 rather than the metal chelate quenchers due to its increased solubility as with the added advantages that

as it absorbs in the blue, it would confer additional sensitivity to the optical recording medium based upon the absorption maximum within 30 nm of the laser wavelength as taught by Nanba et al. JP 60-204396 and confer sensitivity at 410 nm (which is about 405 nm), if this is not already present.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Martin J Angebranndt
Primary Examiner
Art Unit 1756

06/22/2007